Space-Qualifiable 1064 nm Fiber Based Transmitter for Long Range Optical Communications, Phase I

Completed Technology Project (2007 - 2007)

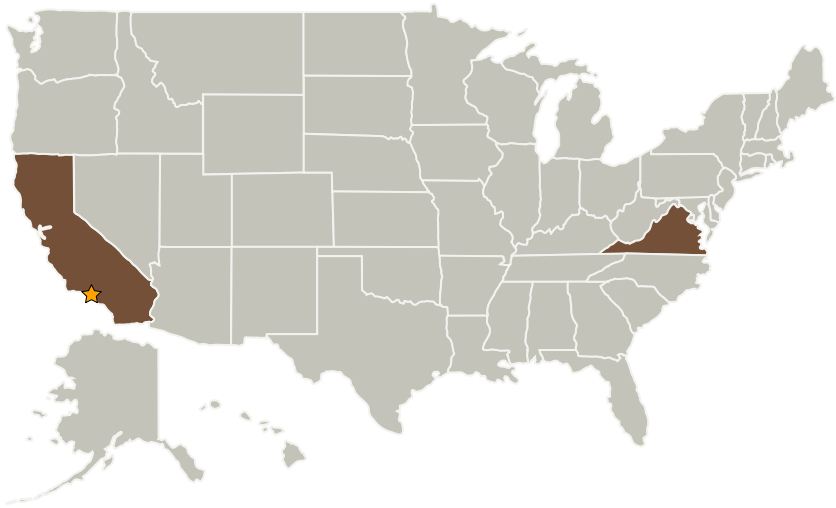
Project Introduction

Fibertek has developed transmitters for Lidar and 3D imaging applications based on fiber optics architectures both at 1064nm. We have demonstrated an all fiber transmitter producing as much as 15W at 10Kpps. This all-fiber based transmitter produces pulses at 1064nm as short as 750ps and can have its repetition rate varied from 10Kpps to several 10s of Mpps. In addition the transmitter central wavelength can be tuned. The space-qualifiable 1064nm transmitter we propose here for Long Range Communication is based on these development efforts. We propose here to extend the operation of our architecture to 150ps pulses and demonstrate the front end during the Phase-I portion of this effort operating between 1Mpps and 60Mpps. We will also work to maintain near transform limited pulses and as high wall-plug efficiency as possible. An Engineering-Unit, designed with space traceable electronic components, will be delivered at the end of the Phase-II portion of this SBIR effort.

Anticipated Benefits

The transmitter developed under this program has numerous applications for ranging and target identification. The ability to modulate pulses at different rates and different pulse duration will also provide a wide range of opportunities in free communication from undersea when the frequency of light is doubled to military intersattelite communications.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Metis Technology Solutions, Inc.	Supporting Organization	Industry Women-Owned Small Business (WOSB)	Albuquerque, New Mexico

Primary U.S. Work Locations	
California	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Project Manager:

Celestino Jun Rosca

Principal Investigator:

Francis Kimpel

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers